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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,370	09/14/2005	Dirk Jeroen Breebaart	NL030241	3471
24737 7590 05/14/2007 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			EXAMINER JACKSON, JAKIEDA R	
			ART UNIT 2626	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/549,370	Applicant(s) BREEBAART ET AL.	
	Examiner Jakieda R. Jackson	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 15 is objected for minor informalities:

Regarding dependent claim 15, the preamble of a system is not consistent with the preamble of the independent claim of an apparatus.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-2, 4, 6-9 and 11-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (PGPUB 2002/0154041), hereinafter referenced as Suzuki.

Regarding **claims 1 and 14**, Suzuki discloses a method and apparatus of generating a monaural signal comprising a combination of at least two input audio signals, said method comprising the steps of:

dividing said at least two input audio signals into a plurality of sequential segments (divides the signals; column 2, paragraph 0018 with column 5, paragraph

0085);

summing, for each of the sequential segments of said audio signals, corresponding frequency components from respective frequency spectrum representations for each audio signal to form a set of summed frequency components for each sequential segment; for each of said plurality of sequential segments (sum; column 6, paragraph 0109),

calculating, for each of the sequential segments a correction factor for each of a plurality of frequency bands (i) as function of the energy of the frequency components of the summed frequency components in said band (equation) and the energy of said frequency components of the input audio signals in said band (equation) (computing section; column 5, paragraph 0093);

correcting each summed frequency component as a function of the correction factor ($m(i)$) for the frequency band of said component (correction information; column 5, paragraph 0087); and

outputting said corrected summed frequency components as said monaural signal (monaural signal; column 3, paragraph 0039 with column 5, paragraphs 0085-0088 and column 8, paragraph 0128 and column 10, paragraph 0159).

Although Suzuki does not specifically recite the exact equations as disclosed, it is old and well known in the art of speech coding that Suzuki's equations are a obvious variants.

Regarding **claim 2**, Suzuki discloses a method further comprising the steps of: providing a respective set of sampled signal values for each of a plurality of

sequential segments for each input audio signal (column 5, paragraph 0085); and
transforming, for each of said plurality of sequential segments, each of said set of
sampled signal values into the frequency domain to provide complex frequency
spectrum representations of each input audio signal (transform; column 5, paragraph
0088).

Regarding **claim 4**, Suzuki discloses a method further comprising the step of:
converting, for each sequential segment, said corrected frequency spectrum
representation of said summed signal frequency components into the time domain
(spectrum; column 9, paragraph 0147).

Regarding **claim 6**, Suzuki discloses a method wherein two input audio signals
are summed, and wherein said correction factors ($m(i)$) are determined according to the
function:

(equation) (column 8, paragraphs 0127-0132)

Regarding **claim 7**, Suzuki discloses a method wherein two or more input audio
signals ($X_{\text{sub}.n}$) are summed according to the function:

(equation) (column 8, paragraphs 0127-0132)

wherein $C(k)$ is the correction factor for each frequency component and wherein
said correction factors for each frequency band are determined according to the
function:

(equation) (column 8, paragraphs 0127-0132)

wherein $w_n(k)$ comprises a frequency-dependent weighting factor for each input
audio signal.

Regarding **claim 8**, Suzuki discloses a method wherein $w_{sub.n(k)}=1$ for all input audio signals (1.00; column 6, paragraphs 0099-0103 and column 8, paragraph 0127).

Regarding **claim 9**, Suzuki discloses a method wherein $w_{sub.n(k)} \neq 1$ for at least some input audio signals (column 6, paragraphs 0099-0103).

Regarding **claim 11**, Suzuki discloses a method further comprising the steps of:
determining, for each of said plurality of frequency bands, an indicator of the phase difference between frequency components of said audio signals in a sequential segment (difference; column 10, paragraph 0130); and

prior to summing corresponding frequency components, transforming the frequency components of at least one of said audio signals as a function of said indicator for the frequency band of said frequency components (transform; column 5, paragraph 0088).

Regarding **claim 12**, Suzuki discloses a method wherein said transforming step comprises operating the following functions on frequency components of left and right input audio signals:

(equation) (column 5, paragraph 0085 with column 8, paragraphs 0127-0132)

wherein $0 < 1$ determines the distribution of phase alignment between the said input audio signals.

Regarding **claim 13** Suzuki discloses a method wherein said correction factor is a function of a sum of energy of the frequency components of the summed signal in said band and a sum of the energy of said frequency components of the input audio signals in said band (energy; column 1, paragraphs 0011-0014).

Regarding **claim 15**, Suzuki discloses an audio coder (coding; column 8, paragraph 0128).

Regarding **claim 16**, Suzuki discloses Audio apparatus comprising an audio coder and a compatible audio player (MS stereo; column 8, paragraph 0128).

4. **Claims 3 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Brennan et al. (USPN 7,110,554), hereinafter referenced as Brennan.

Regarding **claim 3**, Suzuki discloses a method for generating a monaural signal, but does not specifically teach wherein the step of providing said sets of sampled signal values comprises:

combining, for each input audio signal, overlapping segments into respective time-domain signals representing each input audio signal for a time window.

Brennan discloses a method comprising:

combining, for each input audio signal, overlapping segments into respective time-domain signals representing each input audio signal for a time window (overlapping; column 11, line 6 - column 12, line 29), to provide equal or greater signal processing capability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki's method wherein it combines overlapping segments, as taught by Brennan, to result in faster convergence and improved overall effectiveness of the signal processing application (column 2, lines 35-

54 and column 3, lines 33-45).

Regarding **claim 5**, Suzuki discloses a method for generating a monaural signal, but does not specifically teach a method further comprising the step of:

applying overlap-add to successive converted summed signal representations to provide a final summed signal.

Brennan discloses a method comprising:

applying overlap-add to successive converted summed signal representations to provide a final summed signal (column 4, lines 22-67), to provide equal or greater signal processing capability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki's method wherein it applies overlap-add, as taught by Brennan, to result in faster convergence and improved overall effectiveness of the signal processing application (column 2, lines 35-54 and column 3, lines 33-45).

5. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki in view of Nakajima et al. (USPN 5,740,523), hereinafter referenced as Nakajima.

Regarding **claim 10**, Suzuki discloses a method for generating a monaural signal, but does not specifically teach a method wherein the correction factor for each frequency component is derived from a linear interpolation of the correction factors for at least one band.

Nakajima discloses a method wherein the correction factor for each frequency component is derived from a linear interpolation of the correction factors for at least one band (linear interpolation; column 9, lines 55-67 and column 11, line 59 - column 12, line 11), to allow easy adjustment.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suzuki's method wherein the correction factor for each frequency component is derived from a linear interpolation of the correction factors for at least one band, as taught by Nakajima, to allow the receiving conditions to be adjusted easily and reduce variability among units of the receiving condition (column 2, lines 33-64).

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kane et al. (USPN 5,982,901) disclose a noise suppressing apparatus.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R. Jackson whose telephone number is 571-272-7619. The examiner can normally be reached on Monday, Tuesday and Thursday 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number

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for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JRJ
April 27, 2007



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